

SIGNING

Signs are one of the oldest forms of communication. They communicate essential information with written words and symbols. On highways, signs are used to promote motorist and pedestrian safety by providing for orderly and predictable traffic movement. They identify, direct and warn motorists, pedestrians and bicyclists as part of a functional system of interrelated elements, planned at the same time a project is planned, and not an afterthought.

Everywhere, as cities grow in size, the need for signs and other visual information abounds. Good signing systems can make any city an easier and more enjoyable place to be.

Still, useless and unattractive signs abound, causing visual clutter. This clutter, together with all other elements in the environment, competes for viewer's attention. To communicate information, signs must be noticed. There is always a relationship between any object designed and the place where it is used. When treated as part of the whole design, transportation signing systems not only can increase their effectiveness and communicate necessary information without clutter, but improve their integration with the environment. To the extent that it is possible, highway signs should also be designed to provide an aesthetic advantage in addition to their more obvious communication function.

The standards for highway signing and traffic control used by MN/DOT are contained in the in the current edition of the *Minnesota Manual on Uniform Traffic Control Devices for Streets and Highways (MMUTCD)*. This document incorporates the Federal standards of the Manual on Uniform Traffic Control Devices published by the Federal Highway Administration.

AESTHETIC DESIGN RECOMMENDATIONS

6.1 Design Approach

There are two approaches to signing design. The first approach considers signing design to be sympathetic to the environment. When it is appropriate, signs are specifically tailored to the environment of a project and integrated with all other visual elements. The second approach, which traditionally is how signing on transportation projects are designed, considers the communicative function of signs of primary importance and aesthetics as secondary. With this approach, all elements of a system are generally similar in shape, material, color and detail.

It is not the intent of this section to discuss highway signing design at length, but to present

some basic recommendations concerning signing design that supports the vision for the new highway corridor. This vision consists of:

- designing signing support structures to provide an architectural advantage for the corridor that is unique in both appearance and function
- locating sign support structures to provide good visual presentation of the bridge structure, and in particular, the architectural and aesthetic treatments or details used to create visual distinction
- coordinating sign panel size to strengthen visual ties between signs displayed adjacent to each other, and well as, the relationship to its mounting structure
- providing signing that assures highway safety for motorists and pedestrians alike

6.2 Support Structures

The recommended design for sign and signal support structures mounted on bridge decks consists of a constant diameter monotube, designed with radius ends as shown in Figure 6-1. This type of design is presently being developed for a bridge located on I-494 at Penn Avenue in Bloomington, MN where similar design circumstances occurred. The length of the horizontal tube member supported should be sized to permit the location of posts away from curb lines.

Figure 6-1: Signing Support Structures Architecturally integrated sign and signal supports for bridge structures consist of monotubes designed to reflect the uniqueness of the highway corridor.

6.3 Location

Sign size and location should not distract from the aesthetic treatment within the parkway. Neither should it impede views of the signature bridge railings systems. Whenever practical, sign support structures should be placed as far away as is possible from bridges in the new highway corridor. Although important to motorist safety, signs will attract attention away from the architectural and aesthetic development of the other design elements in the corridor, including many bridges that will receive special design consideration. Designers should first seek to relocate traffic signs which directly compete with bridge aesthetics, and if this not possible, work to minimize this conflict.

When signs must be placed on bridges, sign panels and their support structures should be designed so that they visually complement the superstructure depth and design of the railing system. Traffic signs should not be mounted on pedestrian bridges.

Signs and traffic control devices located on county roads and city streets should conform to the MMUTCD as designed by the maintaining road authority. Consult local officials for requirements.

6.4 Panel Size

Many of the new bridges within the new highway corridor have been designed to include special architectural details and aesthetic treatments that will make them visually distinctive. When signs must be placed on bridges, panels should be kept within the silhouette of the bridge whenever practical (ie, designed to fit the structure depth, plus the railing height). Consideration should also be given to pedestrians, who will view the back of these signs when walking across bridge structures.

When signs must be placed on bridges, panels should be kept within the silhouette of the bridge. When sign placement requires that more than one sign, the height of all sign panels should be the same. Exceptions to this recommendation include signs with a size difference exceeding 12 inches. Designers should coordinate layout exceptions with the Corridor Development Unit in Mn/DOT's Office of Technical Support.

Figure 6-2: Sign Panel Placement When signs must be placed on bridges, panels should be kept within the silhouette of the bridge. When sign placement requires that more than one sign, a single dimension should be used whenever possible.

6.5 Sign Lighting

Because of advances in sign sheeting technology leading to the creation of brighter signs (ie, background and legend visible from longer distances), designers should seek to limit the number of illuminated signs within the new parkway corridor.

6.6 Relationship to Planting

The design of secondary trellis support systems for vines planted on bridges should consider the location of bridge mounted signs, so that vine growth is not encouraged to grow over railing systems and into signing structures. Often these structures cannot be relocated because they are placed by defined standards related to motorist safety. However, vine and trellis systems can be.

6.7 Traffic Management System Devices

The location of changeable message signs and surveillance cameras for traffic management are an important component of the modern highway system. Changeable message signs, however, are extremely large devices that can block desirable views of bridges and their aesthetic features. Surveillance cameras must be located on tall poles to avoid objects that block views, such as trees and tall vegetation. Designers should identify traffic management system requirements early in the design process, so that all unnecessary conflicts can be avoided.

6.8 Painting and finishing

Sign support structures along mainlines should be galvanized steel. There are no additional requirements for theme painting. The monotube sign support structure to be located on the 19th Street NW crossing also should be galvanized steel.

Signing placed along frontage roads and city streets should match local design themes. Consult local officials for requirements.

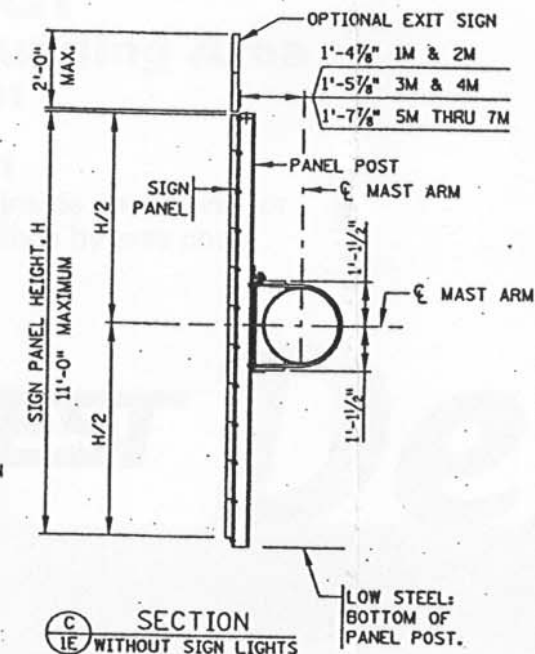
MATERIALS:

MAST AND MAST ARM STEEL-----	SEE GENERAL NOTES
SPLICE PLATE STEEL-----	ASTM A 709, GRADE 50F3
SECONDARY MEMBERS/BASEPLATES-----	Mn/DOT 3306
HIGH STRENGTH BOLTS-----	Mn/DOT 3391
ANCHOR RODS-----	Mn/DOT 3385, TYPE A
REINFORCEMENT	
BARS-----	Mn/DOT 3301
SPIRAL-----	Mn/DOT 3305
CONCRETE-----	Mn/DOT 2461

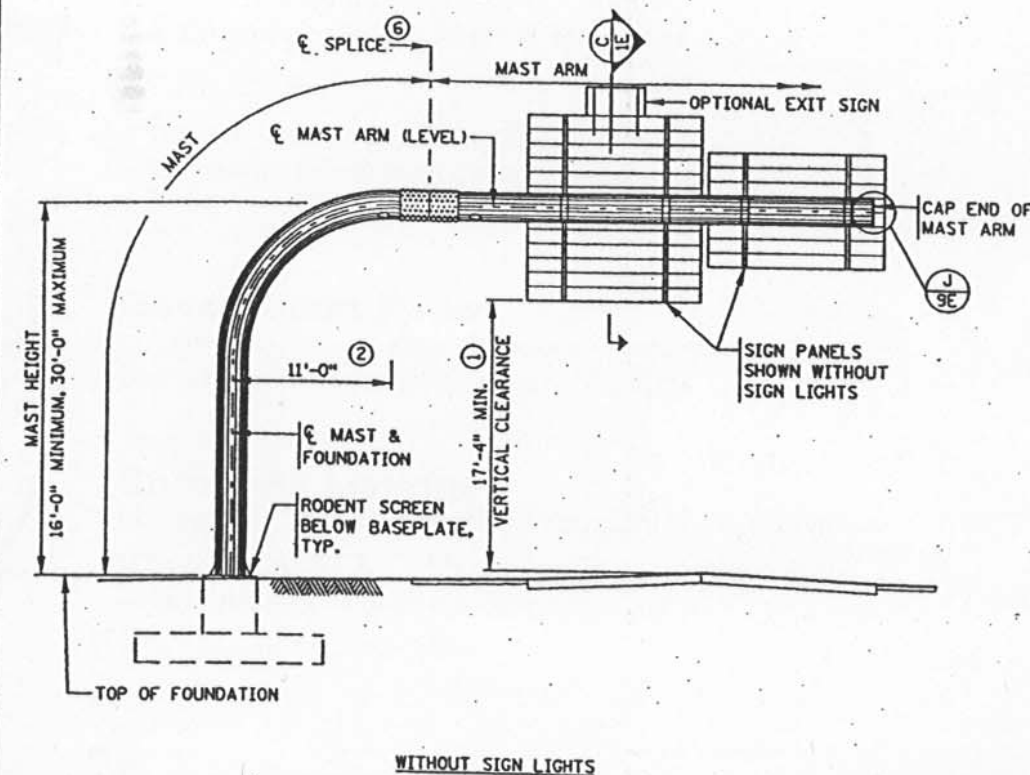
DRAWING NO.	DRAWING TITLE
1E	GENERAL ELEVATIONS AND SECTIONS
2E	QUANTITY INFORMATION AND GENERAL NOTES
3E	CAMBER INFORMATION
4E	SPLICE AND HANDHOLE DETAILS
5E	BASEPLATE AND ANCHOR ASSEMBLY DETAILS
6E	SPREAD FOOTING FOUNDATIONS
7E	DRILLED SHAFT FOUNDATIONS
8E	SIGN PANEL CONNECTION.
9E	SIGN PANEL CONNECTION DETAILS
10E	LIGHT FIXTURE SUPPORT DETAILS
11E	ELECTRICAL DETAILS

- ① MINIMUM VERTICAL CLEARANCE SHALL BE MEASURED FROM LOW STEEL TO THE HIGHEST ELEVATION OF: PAYEMENT, SHOULDERS, OR MOUNTABLE CURBS. IF INSURMOUNTABLE CURBS ARE USED, THE MINIMUM VERTICAL CLEARANCE SHALL BE MEASURED FROM THE HIGHEST ELEVATION BETWEEN THE GUTTER LINES.
- ② SEE MONOTUBE DRAWING 2E FOR ADDITIONAL MINIMUM VERTICAL CLEARANCE REQUIREMENTS IF PAVED SURFACE IS LOCATED WITHIN 11'-0" OF ϕ MAST.
- ③ DRILLED SHAFT FOUNDATIONS SHALL NOT BE USED TO SUPPORT CANTILEVER STRUCTURES.
- ④ DRILL SHAFT FOUNDATIONS SHALL BE USED ONLY WHEN SPECIFICALLY IDENTIFIED ON THE CONTRACT DRAWINGS.
- ⑤ MAXIMUM DIFFERENCE BETWEEN MAST HEIGHTS ON A BRIDGE STRUCTURE SHALL BE 6'-0".
- ⑥ SPLICE MAY BE OMITTED FOR CANTILEVER STRUCTURES WITH CANTILEVER LENGTHS UP TO 17'-0".

Figure 6-1: Signing Support Structures Architecturally integrated sign and signal support structures consist of monotubes design to reflect the uniqueness of the highway corridor.



SECTION
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IE WITHOUT SIGN LIGHTS



Technical drawing of a sign structure showing dimensions and components:

- CANTILEVER LENGTH:** 15'-0" MINIMUM, 46'-0" MAXIMUM
- PERMISSIBLE SIGN PANEL LOCATION:** 5'-0"
- OPTIONAL EXIT SIGN:** EXIT 212
- SIGN PANEL WITH SIGN LIGHTS:** MILLER ROAD FOLLOW GOLF COURSE RD. EXIT
- SPLICE:** ⑥
- RADIUS:** 11'-0" RADIUS, TYP.
- VERTICAL CLEARANCE:** 17'-4" MIN. ①
- OVERHEAD SIGN IDENTIFICATION PLATE - FACING ONCOMING TRAFFIC:** 6'-0"
- SPREAD FOOTING FOUNDATION:** ③
- WITH SIGN LIGHTS**

SECTION
WITH SIGN LIGHTS

REVISIONS	DATE	BY



Figure 6-2: Sign Panel Placement When signs must be placed on bridges, panels should be kept within the silhouette of the bridge. When sign placement requires more than one sign, a single dimension should be selected.